



### Highlights

- 4x analog inputs (24-bit ADC)
- Independent selectability for 0-10 Vdc or 4-20 mA mode
- 4x programmable digital I/O channels
- Modbus master functionality (RS485)
- -40 °C to 80 °C
- 900 MHz or 2.4 GHz radio option
- Secure AES encryption
- Class I, Division 2 (Zone 2) certified



US Patent #6967589



OTC Transmitters & I/O Modules

OTC Gateway



Network Infrastructure



Cloud (Analytics)

## Wireless Multi-I/O Solution with Modbus Master Functionality

### Scalable I/O Solution

The OleumTech® Wireless Multi-I/O Module provides a quick and scalable solution for adding analog inputs and digital I/O points to any OTC Sensor and I/O Network. The Multi-I/O Module is equipped with four high resolution analog inputs (24-bit ADC). Each input can be independently selected for either 0-10 Vdc or 4-20 mA mode of operation. It also packs four independently configurable digital channels. Each channel can be setup as an input, counter, output, or pulsed output.

### Modbus Master Function

The Wireless Multi-I/O Module also features Modbus master functionality, which gives users read and write controls over assets connected over its RS485 Serial port.

### Robust Range, Advanced Networking

With the provided robust RF range, the Wireless Multi-I/O Module can rescue stranded I/O points that was once economically not feasible. The Multi-I/O Module can be added to the network as needed and its I/O points can be mapped to anywhere within the OTC Network creating an efficient, highly advanced system that is yet easy to create and manage. The Wireless Multi-I/O Module communicates with an assigned wireless gateway in the OTC Network. This wireless device is certified for use in Class I, Division 2 (Zone 2) hazardous locations.

### Technical Specifications

| HARDWARE FEATURES           |                                                                                                                                                                                                                                                                                        |
|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Device Functionality        | · Wireless Multiple Input / Output Module                                                                                                                                                                                                                                              |
| Embedded Controller         | · 32-bit Low Power ARM7 Microcontroller with Internal FLASH (Field Upgradeable)                                                                                                                                                                                                        |
| Configuration               | · Config / Debug Port - RS232 Slave Only (RJ-45) / BreeZ® Software for PC                                                                                                                                                                                                              |
| Serial                      | · RS485 Port - Modbus Master Only (RJ-45)                                                                                                                                                                                                                                              |
| I/O Interfaces              | · 4 Analog Inputs (24-bit ADC): 0-10 V or 4-20 mA Selectable Modes<br>· 4 Programmable Digital (Discrete) Channels<br>- Supports Mix of Inputs and Outputs<br>- 30 Vdc (Max) Input for All Channels<br>- 1A Sink Current for Open-Drain Outputs<br>- Configurable Debounce Filter      |
| Device Diagnostics          | · Health Tags: Supply Voltage, Received Signal Strength Indication (RSSI), RF Refresh, RF Timeout                                                                                                                                                                                      |
| WIRELESS COMMUNICATIONS     |                                                                                                                                                                                                                                                                                        |
| Type: 900 MHz / 2.4 GHz     | · ISM Band, Spread Spectrum<br>· 900 MHz: FHSS (Frequency Hopping), FSK, AES Encryption 256-bit (900 MHz), 128-bit (915 MHz)<br>· 2.4 GHz: DSSS (Direct-Sequence), AES Encryption 128-bit                                                                                              |
| Bit Rate                    | · 900 MHz: 9600 bps / 115.2 kbps ; 2.4 GHz: 250 kbps                                                                                                                                                                                                                                   |
| Output Power                | · 900 MHz: Up to 1000 mW; 2.4 GHz: 63 mW                                                                                                                                                                                                                                               |
| Receiving Sensitivity       | · 900 MHz: -110 dBm @ 9600 bps, -100 dBm @ 115.2 kbps / 2.4 GHz: -100 dBm @ 250 kbps                                                                                                                                                                                                   |
| RF Range                    | · 900 MHz: Up to 40 Miles / 64 km with Clear Line of Sight <sup>1</sup><br>· 2.4 GHz: Up to 5.7 Miles / 9.2 km with Clear Line of Sight <sup>1</sup>                                                                                                                                   |
| Antenna Connector           | · MMCX                                                                                                                                                                                                                                                                                 |
| CERTIFICATIONS & COMPLIANCE |                                                                                                                                                                                                                                                                                        |
| EMC/EMI                     | · FCC Part 15 (USA)<br>· IC ICES-003 (Canada)                                                                                                                                                                                                                                          |
| Safety                      | · Class I, Division 2, Groups A, B, C, D T4; Ex nA IIC T4<br>· Class I, Zone 2 AEx nA IIC T4 / 9-30 Vdc, Ta = -40 to 176 °F (-40 °C to +80 °C)<br>· ATEX: Sira 14ATEX4143X; Ex nA IIC T4 Gc<br>· IECEx: SIR 13.0055X; Ex nA IIC T4 Gc / 9-30 Vdc, Ta = -4 to 176 °F (-20 °C to +80 °C) |
| MECHANICAL SPECIFICATIONS   |                                                                                                                                                                                                                                                                                        |
| Dimensions                  | · 4.9" (W) x 3" (H) x 1.4" (D) / 124.5 mm (W) x 76.2 mm (H) x 35.6 mm (D)                                                                                                                                                                                                              |
| Package Dimensions          | · 8" (W) x 6" (H) x 2.5" (D) / 203 mm (W) x 152 mm (H) x 63 mm (D)                                                                                                                                                                                                                     |
| Package Weight              | · ~1 lbs / 0.4 kg                                                                                                                                                                                                                                                                      |
| Mounting                    | · DIN Rail Mountable with Height Adjustability                                                                                                                                                                                                                                         |
| ELECTRICAL SPECIFICATIONS   |                                                                                                                                                                                                                                                                                        |
| DC Power Input              | · 9-30 Vdc                                                                                                                                                                                                                                                                             |
| Average Power Input         | · 2 Watt                                                                                                                                                                                                                                                                               |
| Power Consumption           | · 12 V / 1W: Idle: 60 mA; Configuration: 60 mA; Transmission: 170 mA                                                                                                                                                                                                                   |
| GENERAL SPECIFICATIONS      |                                                                                                                                                                                                                                                                                        |
| Operating Conditions        | · Temperature: Class I, Div 2: -40 °F to 176 °F (-40 °C to 80 °C)<br>· ATEX/IECEx: -4 °F to 176 °F (-20 °C to 80 °C)<br>· Humidity: 0 to 99 %, Non-Condensing                                                                                                                          |
| Warranty                    | · 2-Year Parts and Labor                                                                                                                                                                                                                                                               |
| Country of Origin           | · USA                                                                                                                                                                                                                                                                                  |
| ORDERING INFORMATION        |                                                                                                                                                                                                                                                                                        |
| Model Numbers               | · 900 MHz: WM-0900-002; 2.4 GHz: WM-2400-002                                                                                                                                                                                                                                           |
| Wirelessly Connects To      | · OTC Wireless Gateway                                                                                                                                                                                                                                                                 |
| Configuration Cable         | · SX1000-CC2, 20-ft All-in-One Configuration Cable                                                                                                                                                                                                                                     |

### Networking Diagram



<sup>1</sup> The maximum RF range data was collected under optimal test conditions, including a clear line of sight between antennas. Actual wireless RF range may vary depending on location, RF interference, weather, antenna type, cable type, and line of sight.

